

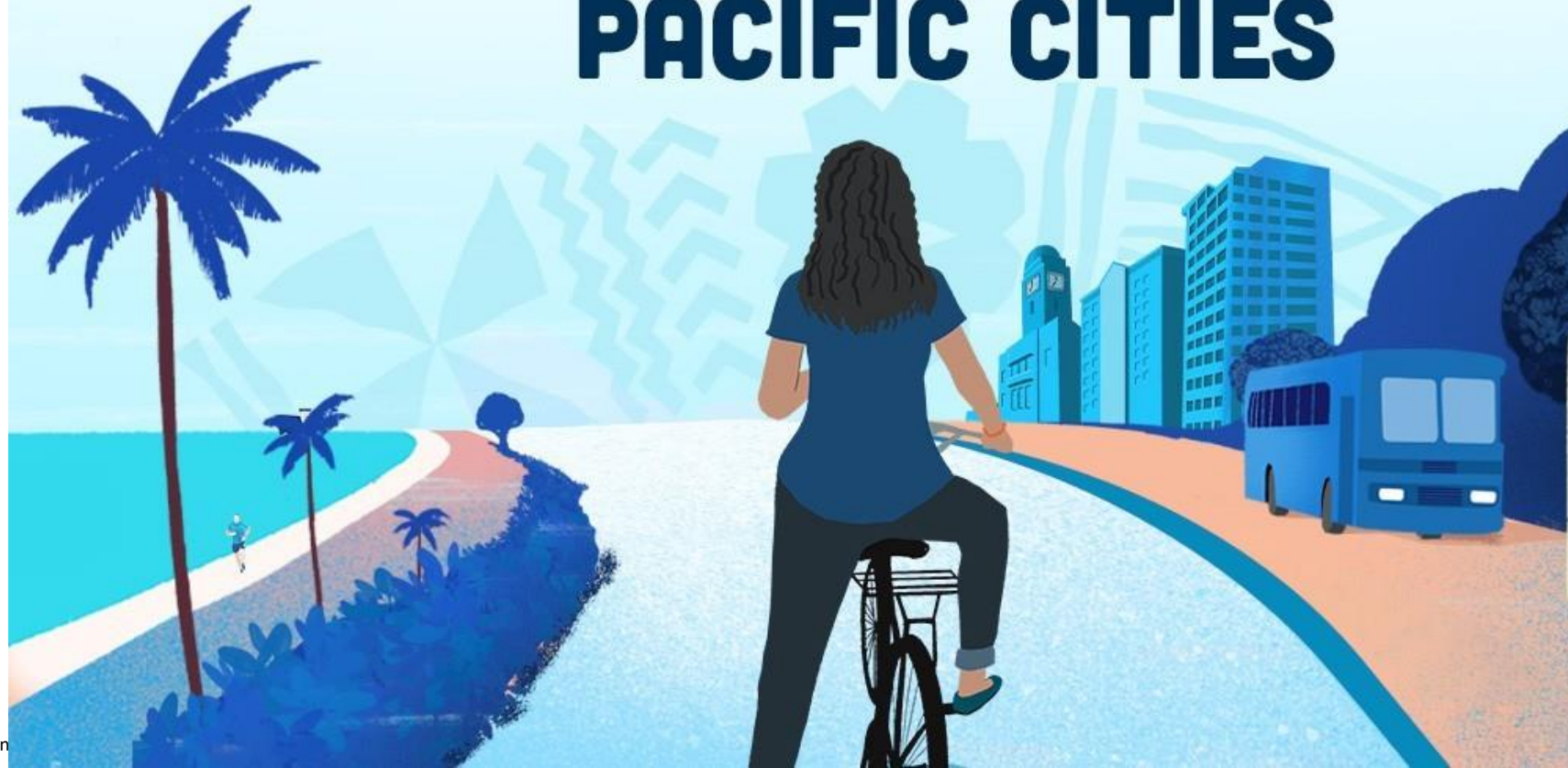
Guide to Mobility for Livable Pacific Cities Webinar Series

Webinar 2 of 9: Designing Streets to Prioritize Walking, Cycling and Micromobility

Bram van Ooijen



GUIDE TO MOBILITY FOR LIVABLE PACIFIC CITIES



About the Speaker

- Director at VOMobility
 - 15 years experience in designing streets for active mobility, predominantly in China and Asia.
 - Projects include street design, bicycle networks, greenways, BRT corridor design, low-emission zones, parking management, TOD
 - Clients include ADB, World Bank and GIZ.
 - Formerly with Institute for Transportation and Development Policy (ITDP) – China office
 - MSc in Civil Engineering, Twente University, the Netherlands
-
- Involved in the Pacific since July 2023
 - Two visits, four countries, six weeks in the region
 - Time spent in Tonga, Kiribati, Fiji and Solomon Islands




Content

1. Introduction to the Importance of Active Mobility
2. Current Conditions and Challenges
3. Street Design for Active Mobility in Pacific Cities
4. Way forward - how to increase active mobility in the Pacific region
5. Next time
 - 27 August: Webinar 3: Tactical Urbanism – Rapid street transformations using the power of the community
 - 10 September: Webinar 4: Education & Encouragement for Active Mobility

Questions & Discussion

1. Introduction to the Importance of Active Mobility

Car Dependency
=
Car-dominant Streets
=
Poor Walking & Cycling Environment
=
Mode Shift to cars



1. Introduction to the Importance of Active Mobility

Walking is the cornerstone of a sustainable and inclusive city:

- Most daily trips in the Pacific are currently on foot: school, markets, shops, and restaurants
- Almost everyone walks, even car drivers do!
- Improving walking = improved access to public transport
- Walking is the most space-efficient mode of transport, three times higher than buses and six times higher than cars¹
- Walking infrastructure is relatively quick and cheap to build, operate and maintain
- Economic benefit to cost ratios of 5:1 up to 20:1 (road development typically 3:1).²
- Road safety improvements with fewer fatalities³
- Most businesses benefit more from people who walk and cycle than those who drive⁴
- Walking benefits health, mood, happiness, reduces anxiety, etc. – physical inactivity accounts for almost 10% of New Zealand's deaths,⁵ likely similar or higher in PICTs.
- Improved appeal for (international) visitors, who depend more on public transport and active mobility, who will spend more time & money when infrastructure is suitable
- Reduced oil imports. Carbon and emission-free

1 Adrian Bell 2007

2 Sustrans 2006

3 Geyer, et al. 2006;
Jacobson 2003

4 Waka Kotahi, 2023

5 Waka Kotahi, 2020

1. Introduction to the Importance of Active Mobility

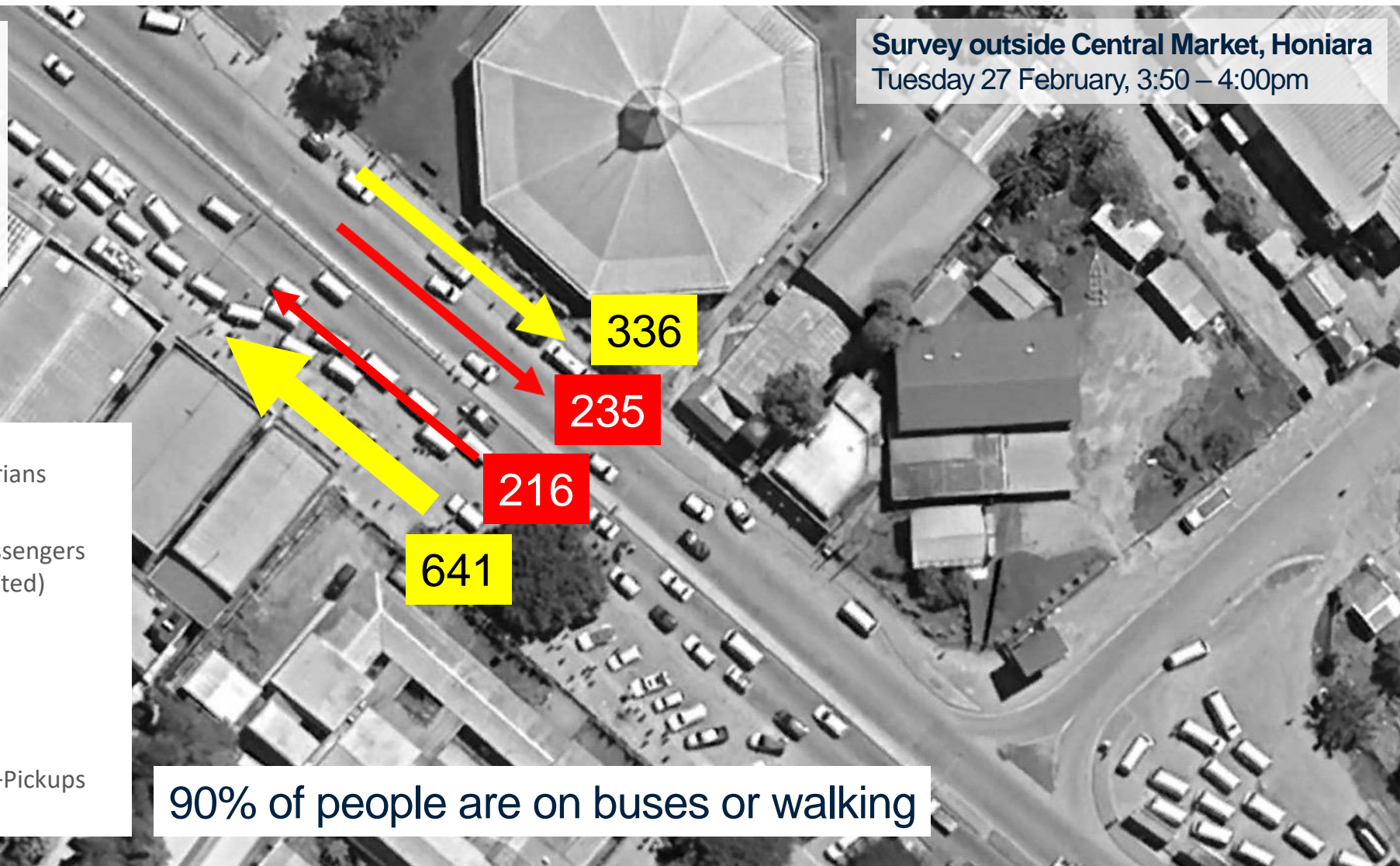
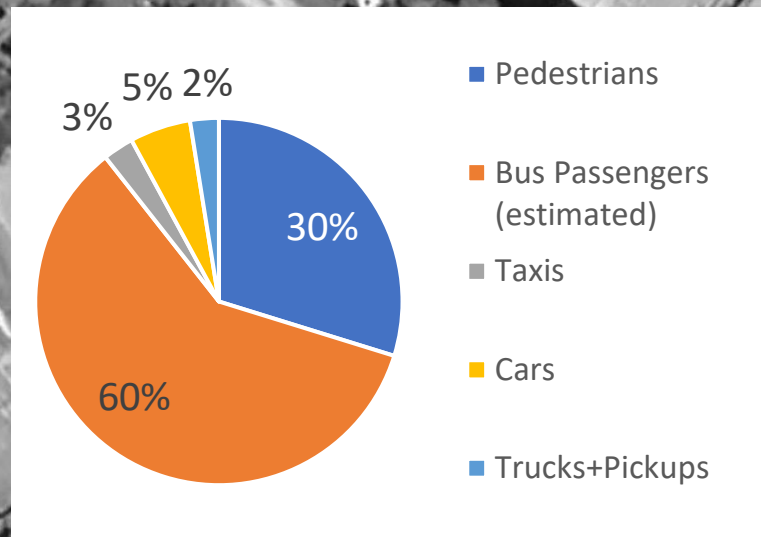


1. Introduction to the Importance of Active Mobility

Pedestrians:
19% of road width

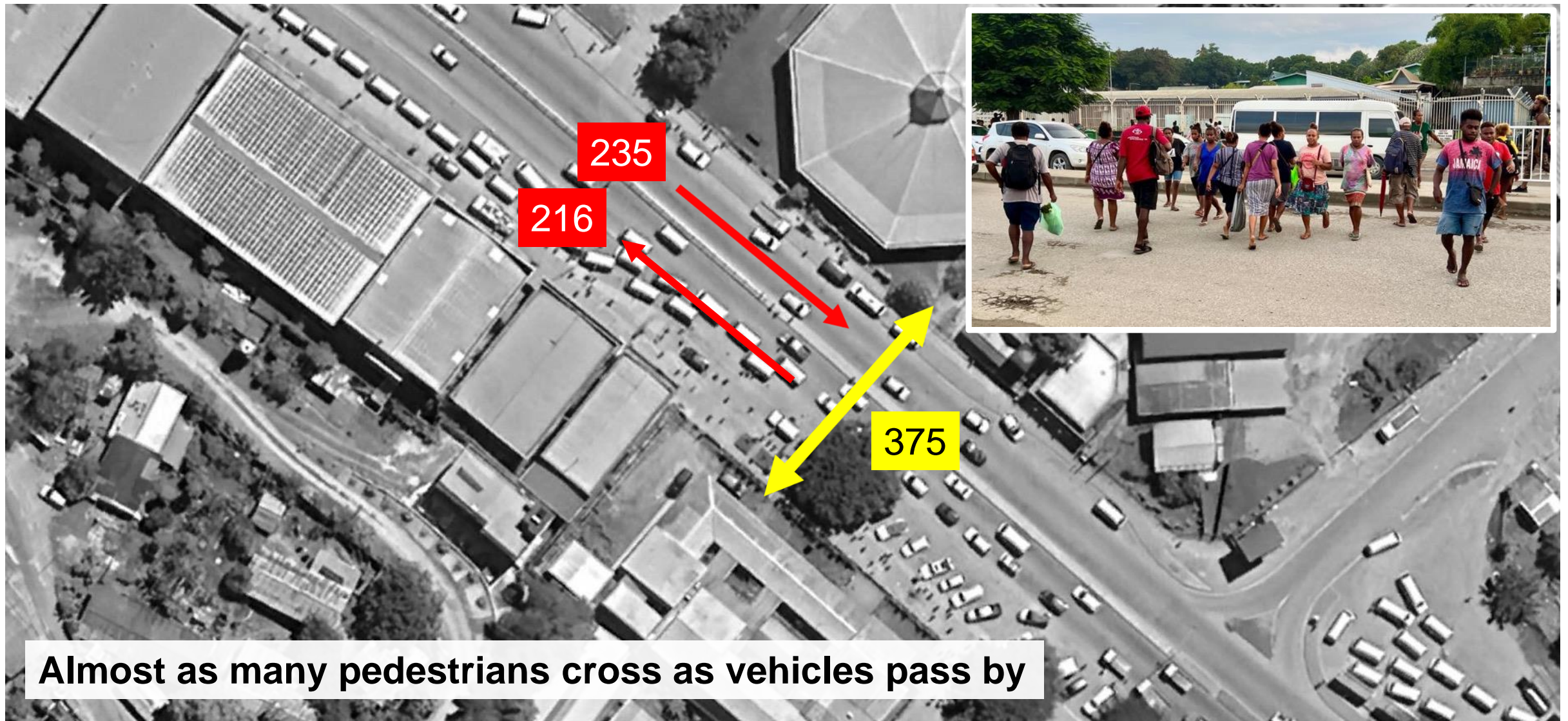
Traffic (incl. buses):
64% of road width

Survey outside Central Market, Honiara
Tuesday 27 February, 3:50 – 4:00pm



90% of people are on buses or walking

1. Introduction to the Importance of Active Mobility



Almost as many pedestrians cross as vehicles pass by

1. Introduction to the Importance of Active Mobility

This World Health Organization HEAT-tool: heatwalkingcycling.org

“If x people regularly walk or cycle an amount of y , what are the health impacts on premature mortality and their economic value?”

Use this to evaluate new and existing projects, for benefit-cost ratios and value for money assessments

HEAT v5.2.0

HEAT Health economic assessment tool

HOME

NEWS AND ANNOUNCEMENTS

HOW HEAT WORKS

START USING THE TOOL

HEAT USER GUIDE

EXAMPLE APPLICATIONS

ACKNOWLEDGEMENTS

ARCHIVE

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Welcome to the Health Economic Assessment Tool (HEAT) for walking and cycling by WHO

>>> July 2023: Update to HEAT v5.2 with option to assess e-biking (see news for details). <<<

Start using the tool

The HEAT is designed to enable users without expertise in impact assessment to conduct economic assessments of the health impacts of walking or cycling.

What is HEAT?

The HEAT estimates the value of reduced mortality that results from specified amounts of walking or cycling, answering the following question:

If x people regularly walk or cycle an amount of y , what are the health impacts on premature mortality and their economic value?

Next to the health benefits from physical activity, HEAT also allows taking into account the mortality effects of exposure to air pollution and traffic crashes while walking or cycling. HEAT can further assess the effects on carbon emissions from shifting travel by motorized modes to walking or cycling.

The tool is based on the best available evidence and transparent assumptions. It is usable for a wide variety of professionals at both national and local levels. These include primarily transport planners, traffic engineers and special interest groups working on transport, walking, cycling or the environment.

What can I use HEAT for?

HEAT can be used for different assessments, for example:

- assessment of current (or past) levels of cycling or walking, e.g. showing what cycling or walking are worth in your city or country.
- assessment of changes over time, e.g. comparisons of “before and after” situations, or “scenarios A (with measures taken) vs. scenario B” (without measures taken).
- evaluation of new or existing projects, including benefit-cost ratio calculations.

HEAT can be used as a stand-alone tool or to provide input into more comprehensive economic appraisal exercises, or prospective health impact assessments.

See examples of results you can produce with our local data or scenario [here](#).

How does HEAT work?

More information on how HEAT works can be found [here](#). A detailed description of the development process, evidence used and main project steps as well as a step-by-step guide can be found in the [Methodology and user guide booklet](#).

More information and contacts

More information and materials are also available at <http://www.euro.who.int/HEAT>

For questions or comments on HEAT please email to heatwalkingcycling@who.int.

1. Introduction to the Importance of Active Mobility

Economic benefits for Honiara, Solomon

Islands:

Adding daily active transport activity of...

1-3km walking | 1-3km cycling | 3-5km e-bike

Population: **630,030** ([UN Pop. Division](#))

Adults aged 20-74 (54% of total): **305,294** for pedestrians

Adults aged 20-64 (51% of total): **292,574** for bikes/e-bikes.

All-cause mortality rate: pedestrians: **1,524** deaths/100,000
([WHO Global Health Observatory](#))

Bicycle/e-bike: **1,222** deaths/100,000

The Value of Statistical Life (**INT\$145,000**) is calculated in International \$ (2017) adjusted nationally for purchasing power parity (PPP).

Added physical activity ranges from 4 to 34 minutes:

Economic value of impacts

Mortality is monetized using a **Value of Statistical Life (VSL)** of **263,000** (Int\$) per premature death

This corresponds to a 2022 (i.e. discounted/inflated) value of:

1km (11min) walk: \$29m/year | \$194m/2024-34

2km (23min) walk: \$58.1m/year | \$389m/2024-34

3km (34min) walk: \$87.1m/year | \$583m/2024-34

1km (4min) bike: \$12.1m/year | \$80.8m/2024-34

2km (9min) bike: \$24.1m/year | \$162m/2024-34

3km (13min) bike: \$36.2m/year | \$242m/2024-34

3km (11min) e-bike: \$24m/year | \$161m/2024-34

4km (14min) e-bike: \$32.1m/year | \$215m/2024-34

5km (18min) e-bike: \$40.1m/year | \$268m/2024-34

1. Introduction to the Importance of Active Mobility

During the Pacific Leaders in Urban Transport workshops, there was strong support for improving walkability (in all cities) and cyclability (esp. in Tongatapu and Honiara).

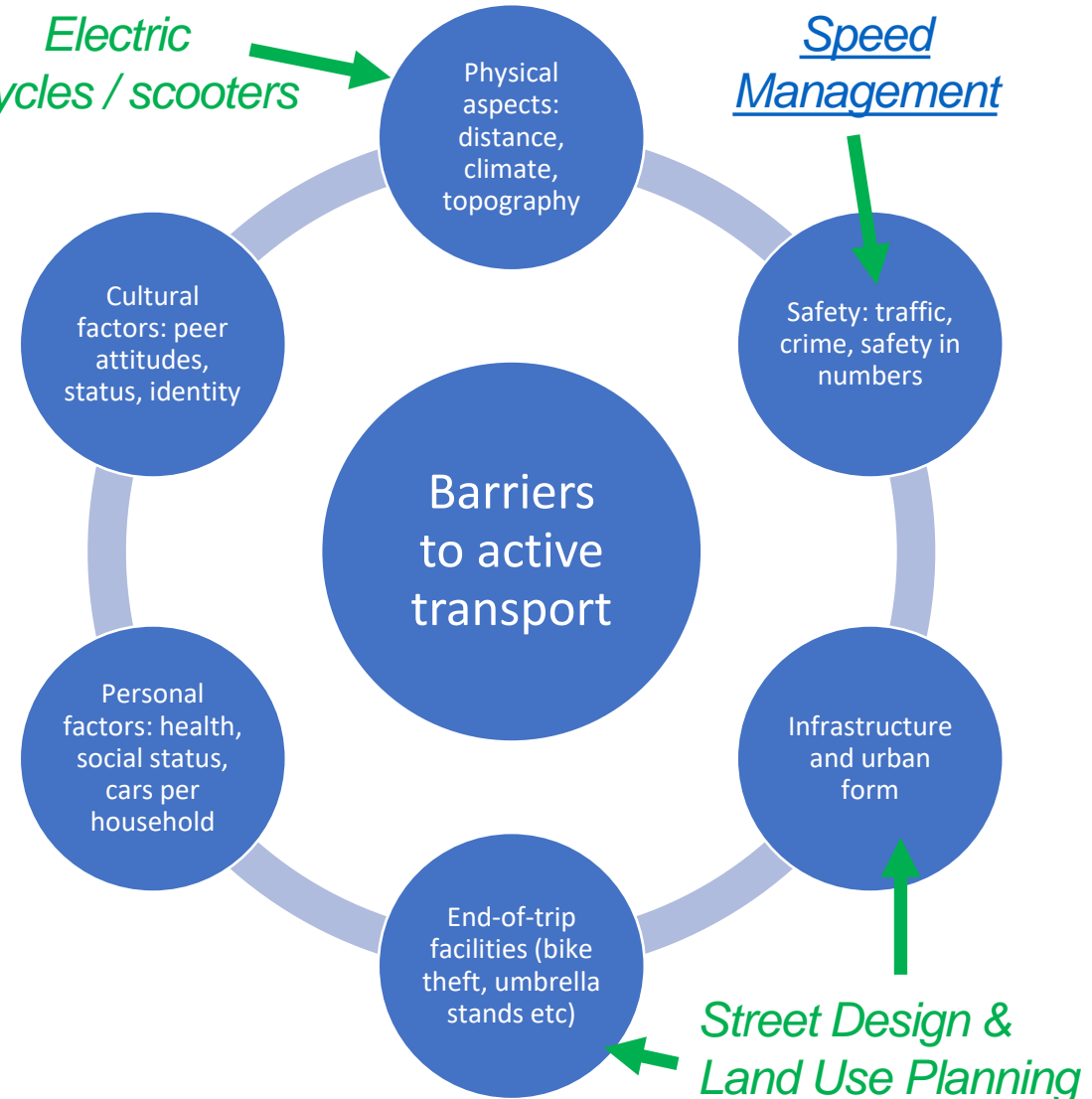
Barriers can be overcome to increase an uptake



Workshop participants in Honiara identify improvements for pedestrians and cyclists

*(September 10)
Education &
Encouragement*

*Electric
bicycles / scooters*



2. Current Conditions & Challenges

Good examples in the Pacific region



Nouméa's seaside greenways for walking, cycling, recreation & tourism.

Source: Facebook Nouméa ma ville



Nadi's Queens Road includes safe pedestrian crossings, public seating, parking management

2. Current Conditions & Challenges



Left: run-off water feeds plants and flowers along Mendana Avenue, Honiara, Solomon Islands



Right: newly-opened bicycle lane along Queen Elizabeth Drive, Suva, Fiji

2. Current Conditions & Challenges

Overview of common street design issues in PICTs:

- **lack of footpaths**, forcing pedestrians to use the (commonly narrow and unpaved) road shoulder. After rain, conditions are muddy, slippery and dangerous
- **narrow footpaths**, in design and/or due to obstacles such as power lines and streetlights
- **encroachment onto footpaths** by shops, restaurants, vendors and/or illegal car parking
- **poor intersection design**, with long crossings and high-speed traffic
- lack of safe mid-block road **crossings**
- **lack of cycling facilities**: bicycle lanes, bicycle parking and bicycle sharing systems
- **poorly lit streets**, causing unsafe conditions in the evening, especially for women and children
- lack of **protection against sun and rain**
- lack of **street furniture and amenities**

3. Street Design for Active Mobility in Pacific Cities

3. Street Design - Interventions

We need to design for ALL street users

Source: GDCI



Pedestrians



Cyclists



Transit Riders



Motorists



Freight Operators
and Service
Providers



People Doing
Business

3. Street Design - Interventions



Honiara city center
(central market),
Mendana Avenue.

3. Street Design - Interventions



Central bus (BRT) station, footpaths, bicycle lanes, safe crosswalks, trees and greening

Honiara city center (central market), Mendana Avenue.

3. Street Design - Interventions



Tongatapu,
Airport Road

3. Street Design - Interventions



'Transit Mall' where pedestrians and cyclists mix with buses at low speeds ~20km/h

Pavers, trees, bicycle parking, outdoor seating

Tongatapu,
Airport Road

3. Street Design - Interventions



Honiara,
Hibiscus Road

3. Street Design - Interventions



Traffic lane narrowing, organised parking, footpaths and bicycle lane, raised speed table for safe crossing, trees, public seating and amenities

Honiara,
Hibiscus Road

3. Street Design - Interventions



Honiara,
Chung Wah Rd

3. Street Design - Interventions



Traffic lane narrowing, shared street, footpaths trees, public seating, pocket park.

All amenities in one 'utility' zone

Honiara,
Chung Wah Rd

3. Street Design - Interventions



Flagstaff Plaza, Bau Street, Suva

3. Street Design - Interventions



3. Street Design – Seaside Greenways

The waterfront has large potential for walking, cycling, recreation and tourism



Honiara



South Tarawa



Tongatapu

3. Street Design – Seaside Greenways



Rio de Janeiro, Brazil

Source: Alamy, The Guardian

3. Street Design – Intersections



Marks Street //
Renwick Road,
Suva, Fiji

3. Street Design – Intersections



Marks Street //
Renwick Road,
Suva, Fiji

3. Street Design – Crossings

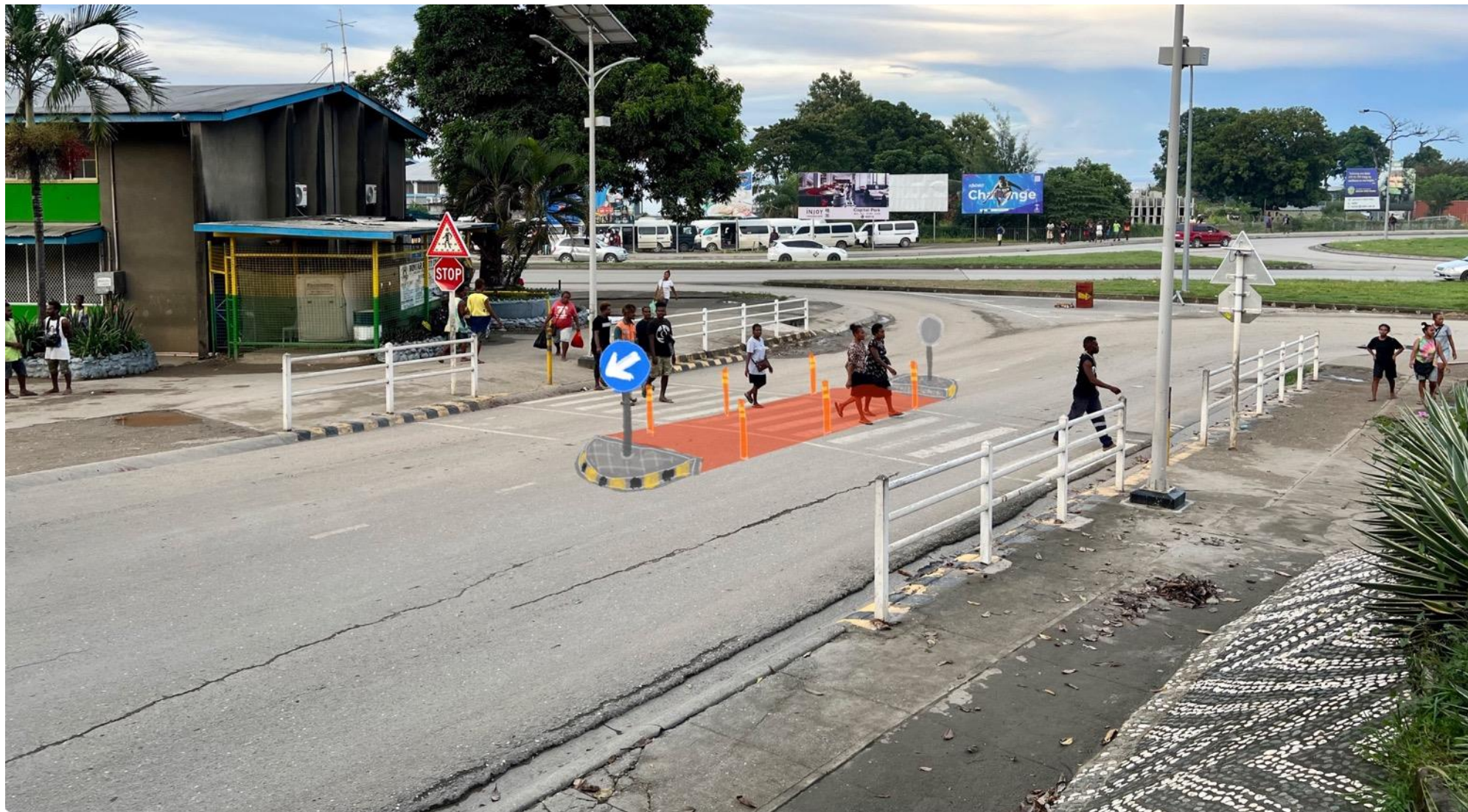


9-meter crossing of two lanes is too long

Traffic STOP signs are insufficient. Street design needs to enforce desired traffic behavior

*Honiara,
Mbokonavera Rd*

3. Street Design – Crossings



Pedestrian
refuge island
(>2.0m)
improves
crossing
safety

*Honiara,
Mbokonavera Rd*

3. Street Design – Crossings



A raised speed table crossing with narrowed down street is best

*Honiara,
Mbokonavera Rd*

3. Intersection Templates - Crossings



John Wesley
Primary School,
Grantham Road,
Suva, Fiji

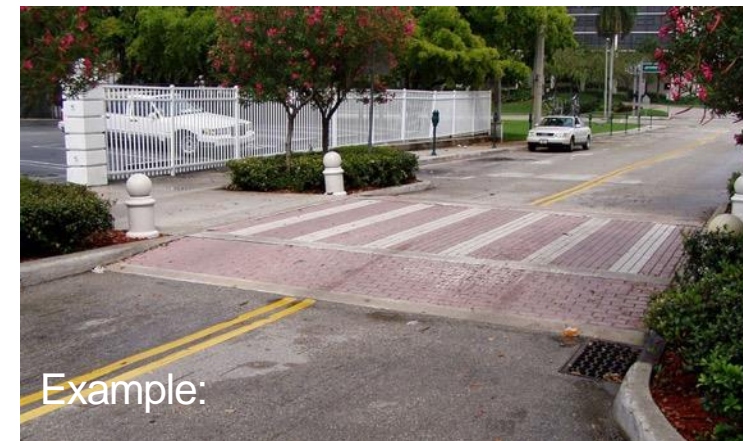
3. Intersection Templates - Crossings



John Wesley
Primary School,
Grantham Road,
Suva, Fiji

3. Street Design – Crossings

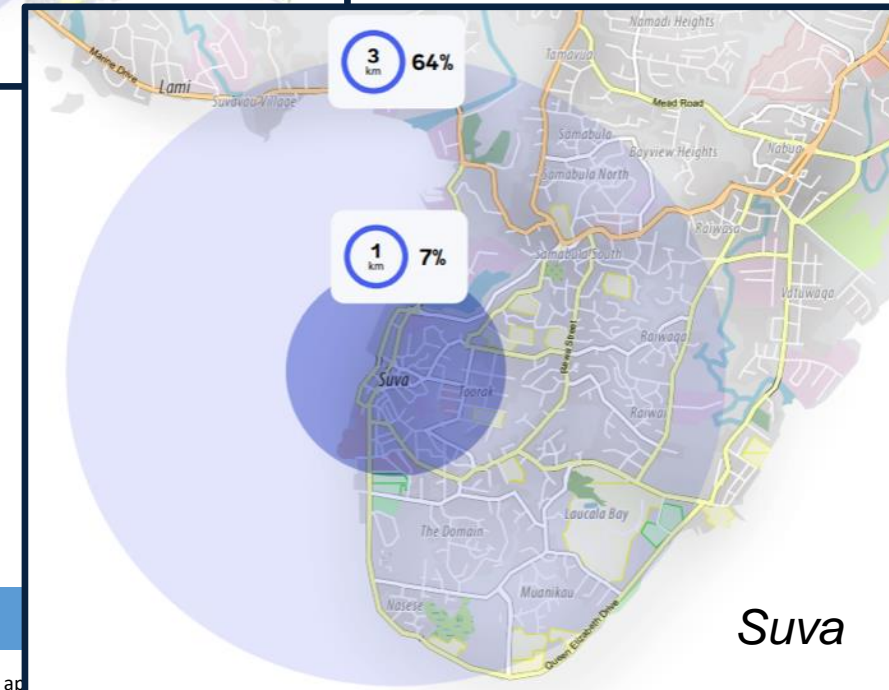
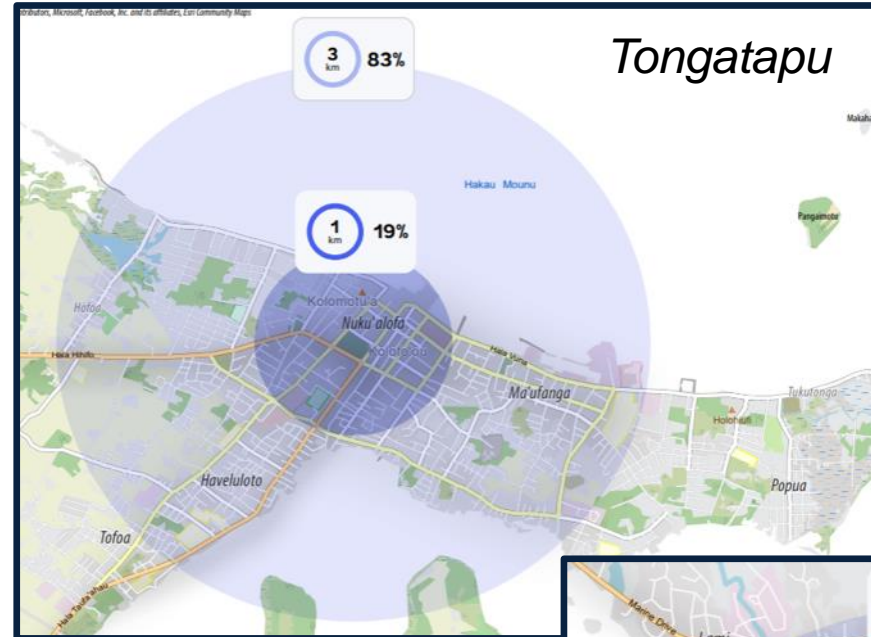
Raised pedestrian crossings on speed tables



3. Street Design – Bicycle lanes

Cycling can be an excellent option for many in PICTs:

- People do cycle already, and some cities have a (lost/losing) tradition of cycling
- Pacific LUTP workshop participants showed a keen interest
- Cities are fairly small and a far majority of trip distances within cycling distance
- Bicycles will be quickest, easiest, cheapest option (esp. during traffic peak hours)
- E-bicycles can offer extra convenience



3. Street Design – Bicycle lanes

Samoa Observer of 25 October 2023:
Donation of 8 high-spec electric bicycles for the Apia Police Force
to assist street patrols.

Source: Samoa Observer, 25 Oct 2023



3. Street Design – Bicycle lanes

Washington DC



Ideally: separated bicycle tracks



3. Street Design – Bicycle lanes

Tokyo



Source: Christoph Szubski (2016, July)

Possible: bicycle lanes on footpaths

Taipei



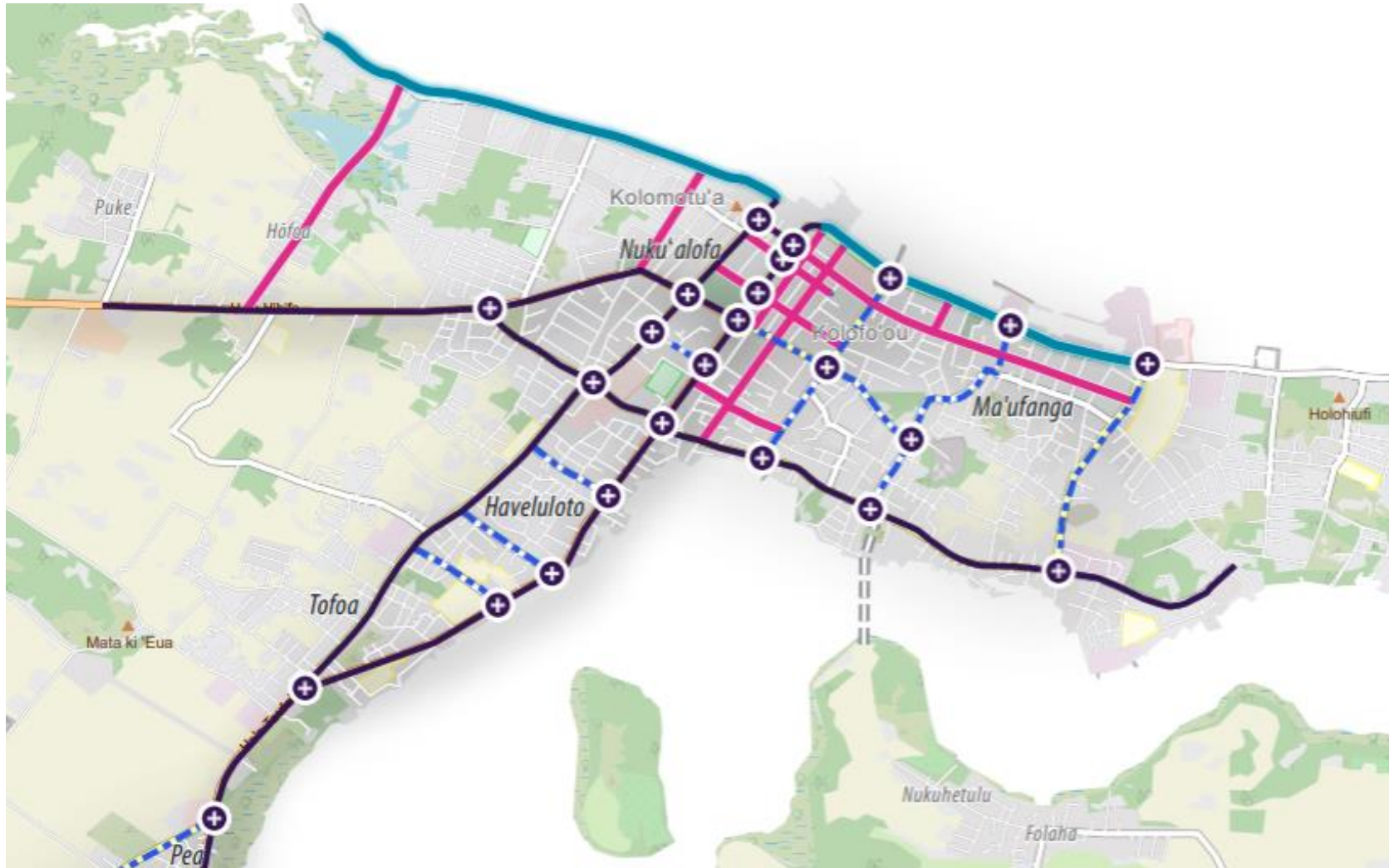
3. Street Design – Bicycle lanes



Sharing of the street: bicycle stamps on road pavement



3. Street Design – Bicycle lanes



Draft proposed **bicycle network for Tongatapu**

4 types of bicycle infrastructure (~60 kms)

Intersection treatments

Bicycle parking

Bicycle sharing

- SEGREGATED BI-DIRECTIONAL CYCLE TRACKS (34.58 km)
- GREENWAY LINE (5.28 km)
- - - CYCLEWAYS ADJACENT TO NEW FOOTPATHS (9.8 km)
- ROAD SHARING- SHARROWS (9.82 km)
- - - FUTURE ADB-FUNDED BRIDGE
- ⊕ KEY INTERSECTION TREATMENTS

3. Street Design – Bicycle lanes



Tongatapu,
Airport Rd

3. Street Design – Bicycle lanes



Lane narrowing,
bicycle lane, trees,
public seating and
amenities

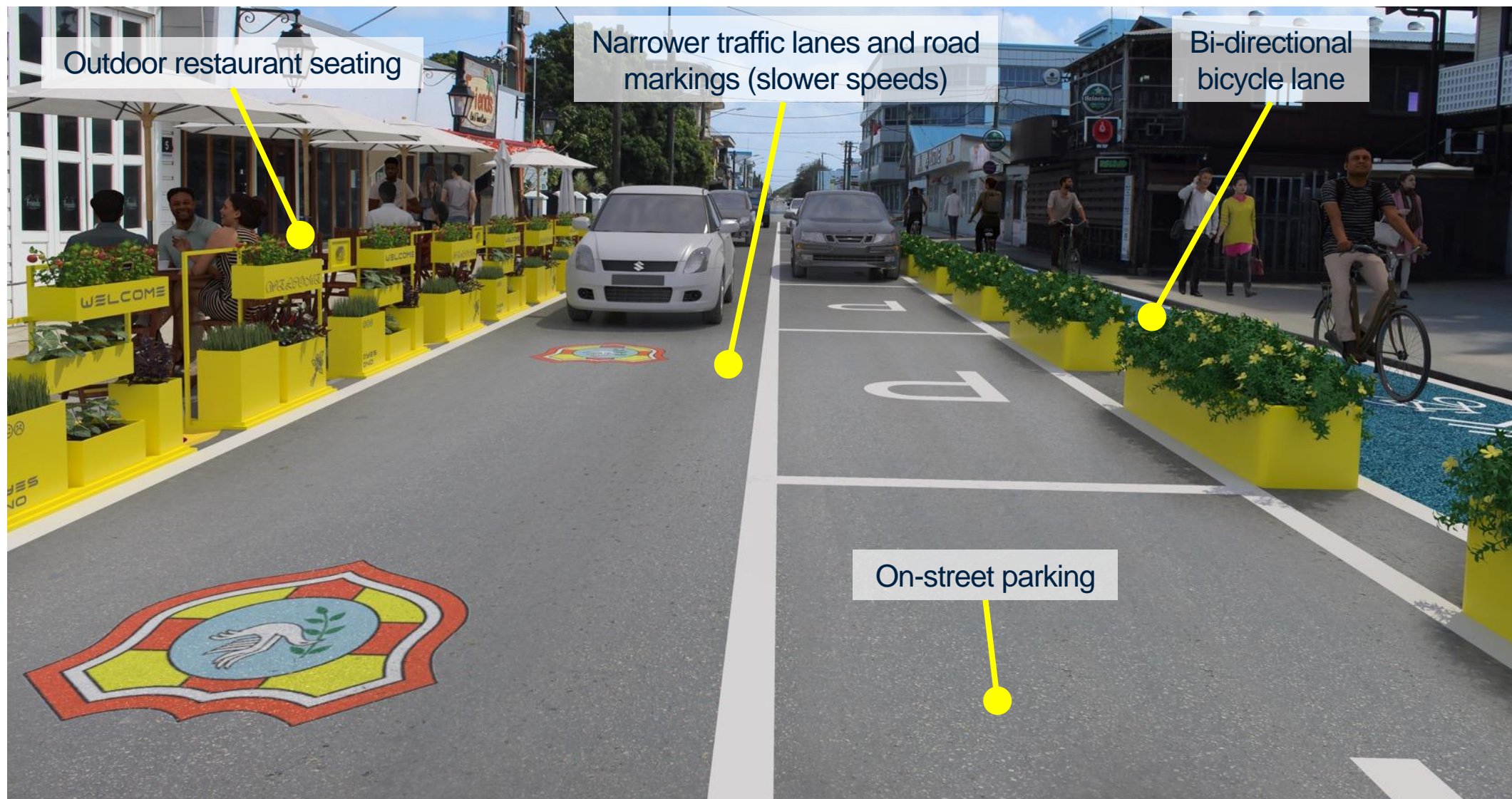
Tongatapu,
Airport Rd

3. Street Design – Bicycle lanes



Example of a street improvement in Tongatapu: Taufu'ahau (Airport) Rd

3. Street Design – Bicycle lanes



3. Street Design – Amenities

Shaded walkways



Bioswales, trees, plants



Streetlights



Signage, wayfinding



3. Street Design – Amenities

Pocket parks, seating



Bicycle parking



Playspaces



3. Street Design – Bicycle sharing

Combine with a bicycle sharing scheme for Tongatapu, serving both locals and (cruise) tourists.

Low annual costs for locals can be subsidised through higher fees for casual visitors with a higher willingness to pay. The Biki bicycle sharing scheme in Oahu, Hawaii uses a low, annual fee of US\$15-25 for residents, while tourists pay US\$4.50 for 30 minutes or US\$12 for up to 24 hours.



Source: Sina (2020)



Source: Flashpacking America

3. Street Design – Electric Bicycles

- Fully electric or ‘pedal-assist’
- Easier for longer distances and hilly terrains
- Dominant mode of urban transport in Chinese cities

Range: 40-80km

Charging: 0-80% in 2 hours, 100% in 7 hours

Price (China): ~200-500 US\$

In comparison to a car, an electric bike is:

- 24 to 50 times cheaper
- 20 to 25% faster than cars during peak hours *(time searching for parking not included)*
- uses 5.5 times less road space to transport the same amount of people

Data by ITDP, based on research for Guangzhou, China



Source: Baidu Baike



Source: Suning

4. Way forward:

How to increase active mobility in the Pacific region

4. Way Forward

Opportunities for improving Street Design for Active Mobility

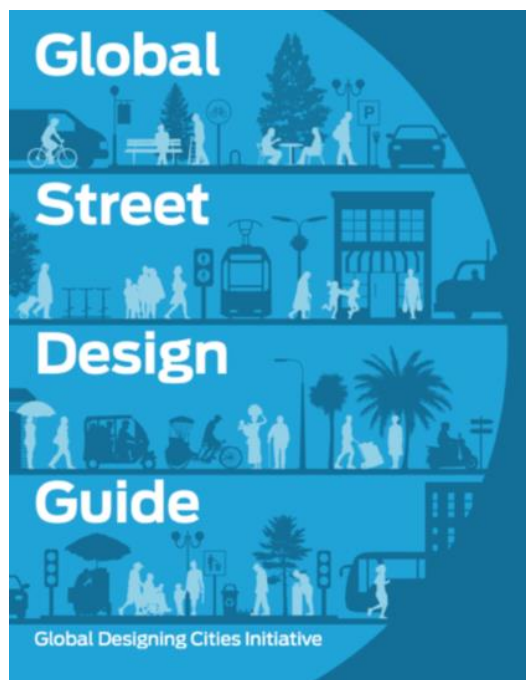
1. Make active transport facilities an **integral part of future road infrastructure development**.
 - New road developments
 - Road rehabilitation/resurfacing projects
 - Hire the right people/firms, include active mobility in their TORs, prescribe the proper street design manuals
 - Ask donors for the inclusion of high-quality pedestrian (and cycling) infrastructure
2. **Review the current portfolio** of infrastructure projects and ensure the inclusion of pedestrian (and cycling) facilities. Small improvements (in terms of design, budget and time) often have a big impact.
3. Add pedestrian and cycling improvements to **road-related projects** such as power, sewage, climate-proofing, etc. When digging up roads, you have an opportunity to rebuild it better. Adding active mobility to public transport projects can improve pedestrian access to bus stops and increase its ridership.

4. Way Forward

Opportunities for improving Street Design for Active Mobility

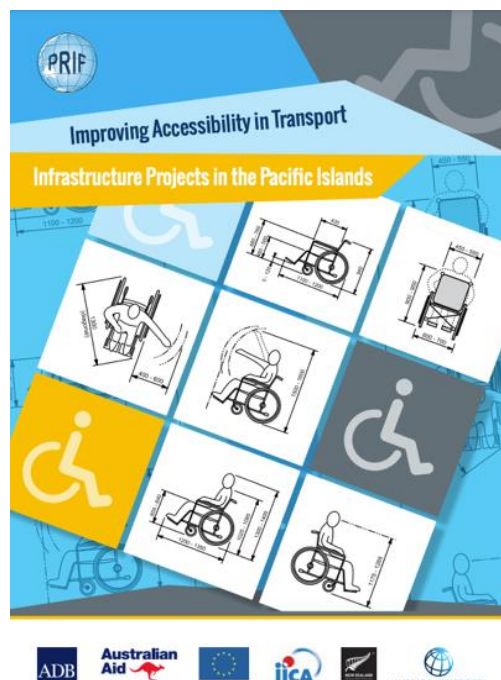
4. **Implement specific active mobility projects** when large opportunities for active mobility uptake await. Build a best practice, document results, win international prizes and scale up across the region:
 1. City center street improvements (retail, tourism, livability, urban greening goals): improvement of footpaths, creation of a bicycle network, traffic calming, safe intersections and crossings, pedestrian streets, seaside greenways, planting of trees and public seating. Most capital cities are suitable.
 2. Port area/seaside revitalizations. Honiara is a good example.
 3. Bicycle lane network and bicycle sharing, including a (e-)bicycle hub for maintenance and repair. Tonga, Vanuatu, Suva are candidates.
5. Influence government decision makers and development partners to **include active mobility in infrastructure and transport investment plans**, master plans, development strategies, planning documents and street design manuals.
6. **Enhance the institutional capacity** of local governments through in-house, on-project international consultants, workshops and training, international study tours, etc. A long list of resources is shared in this presentation.

Further Reading



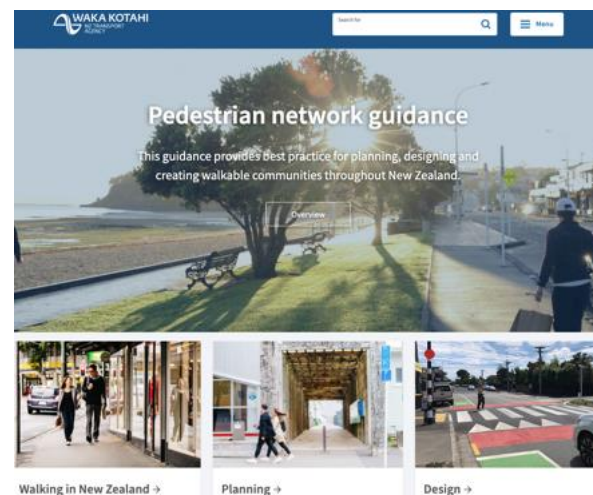
Global Street Design Guide (2021) – by Global Designing Cities Initiative. Practical guide on the planning and design of streets, infrastructure elements and best practice examples.

Download for free [here](#)



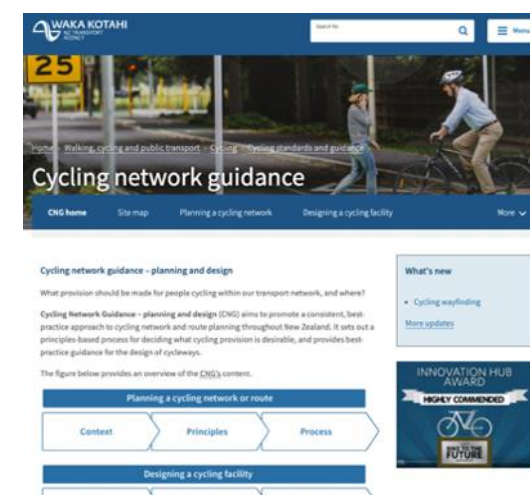
Improving Accessibility in Transport by PRIF (2020) - Design guidelines and checklists to enhance accessibility in transport and built environment in Pacific countries.

Download for free [here](#)



Pedestrian Network Guidance, website by Waka Kotahi, New Zealand's Transport Authority – detailed guidance on pedestrian facility planning, design, implementation, case studies and more.

Find resource [here](#)



Cycling Network Guidance, website by Waka Kotahi, New Zealand's Transport Authority – detailed guidance on cycle network planning, facility design and planning and design support.

Find resource [here](#)

Other Australian and New Zealand street design manuals:

- 2022 NZ Transport Agency Urban Street Design Guide ([link](#))
- 2021 Austroads Guide to Road Design Part 6A: Paths for Walking and Cycling ([link](#))
- 2008 NZ Transport Agency Traffic Control Devices Manual ([link](#))
- 2024 NZ Transport Agency Public Transport Design Guide ([link](#))

Further Reading / Watching

Course	Delivered by	Cost	Why attend / duration
<u>EIT Urban Mobility Academy Youtube Channel (300+ videos)</u> Short and easy-to-follow videos that showcase cutting-edge practices in urban mobility. Subscribe for regular updates.	European Institute of Innovation and Technology & partners	Free	European best practice 5-10 mins each online
<u>EIT Urban Mobility Online Short Courses</u> 1. City Livability, Designing a Livable Neighbourhood, Electrification of Urban Mobility, Flexible Curbside Management, Insights into Gender Differences in Urban Transport, Mobility-as-a-Service (MaaS) explained, Sustainable Urban Logistics, The Effects of Covid-19 on Urban Mobility, Urban Mobility: Accessibility for All, User Experience for Mobility and Public Space, Bringing Urban Nature into the Cities of Tomorrow, Active Mobility at the Heart of Transport Modelling, Demystifying Shared Mobility, Fostering Innovation in the Mobility Sector, Free Visualization Tools for Urban Mobility Planning, Superblocks: rethinking cities and urban space for citizens, Sustainable and Effective Parking Management in Cities, Understanding Sustainable Urban Mobility Plans	European Institute of Innovation and Technology & partners	Free	European best practice 1 to 4 hours each online
<u>EIT Urban Mobility Online Long Courses</u> Communicative Planning for Urban Mobility, Planning the Streets of the Future, Street Experiments for Sustainable and Resilient Cities, Urban Mobility for Livability, Alternative Mobility Narratives, Governing the Transportation to Sustainable Systems, Understanding Cycling in Europe, Reclaiming the Street for Livable Urban Spaces, User Experience for Inclusive Cycling in Cities	European Institute of Innovation and Technology & partners	Free	European best practice 10 to 20 hours each online
<u>Planning and design for cycling</u>	ViaStrada & Waka Kotahi	NZD \$400	1 day, in person
<u>Urban Street Design</u>	Waka Kotahi, ViaStrada, et al.	TBA	2 days, in person
<u>Designing the Cycling City</u>	Urban Mobility Academy	NZD \$975	2 days, in person
<u>Unraveling the Cycling City</u>	University of Amsterdam	Free	4 hours/week, 5 weeks including
<u>Principles of a Strong Town</u>	Strong Towns Academy	Free	Policy-making, 23 hours online
<u>Aligning Transportation with a Strong Towns Approach</u>	Strong Towns Academy	Free	Policy-making and financing, 6 hours online
<u>How Active Mobility creates socially and economically Strong Towns</u>	Strong Towns Academy	USD \$395	Policy-making, financing and street design, 12 hours online
<u>Mobility and Access for Babies, Toddlers, and their Caregivers</u>	ITDP	Free	Policy-making, 2 hours online
<u>Mastering the Cycling City</u>	ITDP	Free	Street design, 3 hours online
<u>CIVITAS Sustainable and Smart Mobility for All Learning Centre</u> Cargo Bikes, Planning Charging Infrastructure, Micromobility and SUMPs, City Center Vehicle Access Regulations, Car Sharing, Marketing Urban Cycling	CIVITAS	Free	Street design, 8 hours online European best practice, 5 to 10 hours each online

5. Upcoming!

- 27 August: Webinar 3: Tactical Urbanism – Rapid street transformations using the power of the community
- 10 September: Webinar 4: Education & Encouragement for Active Mobility

Questions & Discussion

Please raise your questions, concerns, challenges and ideas.

Thank you!



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